

is, in all likelihood, what Babington calls *R. glomulifera*, Light. It is, however, quite distinct from it. The breadth of the spores is not quite so much as stated in the paper. I find the dimensions expressed by the formula $0.03-0.042$ mm. $\times 0.005-0.008$ mm. Medulla pale, K – C pale-red. Gonidia flavescent; diam. $0.005-0.008$ mm.

I possess a very curious variety of *R. montagnei*, Bab. Thallus lurido-cervinus vel lurido-fuscescens, ad nigricantem mergens, corrugatulus, subtus nigricans, fere undique minutissime et brevissime nigro-tomentellus, et pseudo-cyphellis minutis, albidis prominulis creberriter adpersus; medulla alba vel albida K flavens. Sporæ fuscae, fusiformi-ellipsoidæ, 1-septatæ, interdum polari-biloculares, $0.022-0.028$ mm. $\times 0.008-0.01$ mm.

Apices of paraphyses often fusco-clavate, and rendered violaceous by K. Spermogonia situated in small prominences with blackish osteoles. Corticola, near Wellington, New Zealand (*J. Buchanan*).

This form may meanwhile at least be distinguished by the name *Ricasolia luridescens*, Strn. I see the hypothecium is often fulvescent. Perhaps this colour is owing to age.

NOTE.—The type specimens of the New Zealand species named by Dr. Stirton have been deposited in the herbarium of the Canterbury Museum.—J. W. NAYLOR BECKETT.

ART. XLI.—*A New Classification of the Genus Pyxine.*

By JAMES STIRTON, M.D., F.L.S.

Communicated by T. W. Naylor Beckett, F.L.S.

[Read before the Philosophical Institute of Canterbury, 3rd November, 1897.]

THE genus *Pyxine*, the species of which are so widely distributed throughout tropical and subtropical countries, is a very perplexing one, inasmuch as there is apparently an interchange of characters amongst the seven or eight species constituting it. The different elements for the discrimination of these species are—First, the appearances presented by the medulla—viz., white, pale-yellow through orange, and orange-red to coccineous; second, the constitution and size of the spores; third, the colour of the upper surface of the thallus; fourth, the presence or absence of soredia; fifth, the chemical reactions by K—i.e., *liquor potassæ*—on the thallus and

medulla; sixth, the different tints presented by the hypothecium, as well as differences in its constitution, as indicated by K; seventh, the presence or absence of purplish masses beneath the hypothecium.

The hypothallus, including the rhizinæ, can only indicate secondary differences, as the elements are very variable. The reactions by K on the upper thallus are of use in some instances. For the most part there is no reaction whatever; in others a distinct yellow reaction. The reactions by K on the medulla are all negative in the instances having a white medulla. In the pale-yellow or yellow medulla K renders the colour paler, or obliterates it. Where orange or orange-red is presented K develops a faint purplish colour, while in the coccineous medulla a full purple or violaceous colour is developed. The constitution of the spores presents one or two characteristic differences. In one—viz., *P. cocoës*—the spores are merely bilocular, without any distinct traces of a middle septum, the loculi large, and not connected by any apparent tube. In all the others the presence of this connecting tube is more or less manifest, especially after the application of K. The differences in the size of the spores are so great that very little significance can be attached to them, although authors, especially Krempelhuber, have endeavoured to found specific distinction on such differences. I cannot agree with him or them. Apart from size there is, in this genus, more uniformity in the constitution of the spores than in almost any other. Each nucleus may break into two, as in *P. eschweileri*, Tuck., but this peculiarity is not constant. One specimen may show bilocular and quadrilocular spores intermingled, although I have seen in one instance almost all the spores quadrilocular.

In this genus there are three fairly-well-defined groups of the species—First, those which have apothecia throughout all the stages of development and growth with a permanent thalline border; second, those where the apothecia are at first covered by a thalline veil, their eruption through this veil leaving a thalline border, which ultimately blackens or disappears; third, those species which are lecideine and black through all the stages. In all the specimens of the first group which I have examined the epithecium is never coloured violaceous by K, but shows the apices of the paraphyses fuscous or, rarely, lutescent. In the other two divisions the epithecium is bluish or bluish-black under the microscope, and this colour is turned to a beautiful permanent purpuraceous or purpureo-violaceous colour by K.

The members of the first division are *Pyxine picta* and *P. confluens*, between which I can scarcely see any differences of sufficient importance to warrant specific distinction. Tucker-

man, in his Lich. of N. America (1882), gives a third species under the name *P. frostii*, Tuck., which has more pretensions to distinction. I fear, however, this species develops ultimately a blackened border to the apothecium. In the absence of authentic specimens I am compelled to separate from it a species from Queensland, inasmuch as the latter shows a blackened border, and otherwise has all the characteristics of the species ranked under the second division, as given above. Hitherto authors have not done much to elucidate or define the species, but rather to confuse them. I give only one instance amongst several that might be adduced. Nylander, in his Lich. New Granada, vol. ii., speaks of the apothecia of *P. sorediata* as seated on a yellow, then on a white, and lastly on a flavo-rufescent stratum. With reference to this purpurascens or rufescent mass beneath the hypothecium, I have not seen it present in any specimen having a yellowish medulla, but merely an extension upwards of this same yellow medulla beneath the apothecium. This distinctive mass occurs only in those species with white medulla. In *P. coccifera*, Fée, the red medulla is in all likelihood prolonged upwards beneath the apothecium, but, apart from it, there is no separate or differently coloured mass.

I omit the descriptions of those members of the genus already described by Nylander in vol. ii. of his Syn. Meth. Lich.

Pyxine consimilis, Strn. = *Physcia consimilis*, Strn., Trans. Phil. Soc. Glasgow (1879).

Thallus cinereus vel obscure cinereo-virescens (K flavens), adpressus, rugulosus, sorediis parvis et isidiis parvis coralloideis sæpe creberriter adpersus, versus centrum squamosus squamis imbricatis, margine sæpe coralloides-dissectis, ambitu laciniatus; medulla albida (K—); apothecia nigra, sæpissime cæsio-pruinosa, lecanorina, mediocria (latit. 0.6–1.5 mm.), plana, margine prominulo, pallido vel pallide rufescente, lævigato, fere integro cincta; sporæ 8næ fusæ, simplices, sæpe spurie 1-septatæ, 2-nucleatæ, oblongæ vel obtuse fusiformes, 0.014–0.023 mm. × 0.006–0.007 mm., paraphyses distinctæ, graciles apicibus lutescentibus clavatulis rarius leviter fusciscentibus, non inspersis (K—); hypothecium crassum fusconigrum. Iodo gel. hym. intensive cærulescens. Corticola prope Chinsurah Indiæ Dr. G. Watt lecta.

Although near *P. picta*, I consider this lichen distinct.

Pyxine cognata, Strn., Trans. Phil. Soc. Glasgow (1879).

Similis *P. meissnerii* sed thallus glaucescens vel pallide glaucescens, stellato-laciniatus (K—); medulla aurantiaca vel rufo-aurantiaca, K leviter vel obsolete purpurascens; apothecia

nigra, plana, acute marginata, dein convexula et immarginata, omnino lecideina; sporæ fuscae, 1-septatae, binucleatae (nucleis sæpius tubulo tenui junctis), variantes, 0·017–0·027 mm. \times 0·0065–0·009 mm.; paraphyses confertae, graciles apicibus caeruleo-nigris (K violaceis). Hypothecium fuscum (K—). Iodo gel. hym. caerulescens. Corticola Nilgherries Indiæ (G. Watt).

There are no reddish masses beneath the hypothecium, but merely the reddish-yellow medulla. The black perithecium is seen to curve round the apothecium and to cover it beneath, unless at the point of attachment to the thallus, where it is interrupted.

Pyxine rugulosa, Strn.

Thallus pallidus vel cinereo-pallidus (K flavens), margine laciniatus, adpressus, versus centrum crustaceo-congestus, rugulosus, crassiusculus, intus flavus; apothecia nigra, primum thallino-marginata, demum lecideina, plana, vix marginata, dein mox convexa et immarginata (latit. 1–1·5 mm.); sporæ 8næ fuscae, 1-septatae, binucleatae, interdum 4-nucleatae spatiis apicalibus sæpius subincoloribus, oblongae vel fusiformi-oblongae, 0·016–0·023 mm. \times 0·006–0·007 mm.; paraphyses sat discretæ apicibus nigris vel caeruleo-nigris (K violaceis). Hypothecium fuscum vel fusco-nigrum (K—); Iodo gel. hym. intensive caerulescens. Queensland, prope Jimbour (F. M. Bailey).

In this lichen traces of a slender connecting-tube can only be seen after the application of K. There is no rufescent mass beneath the hypothecium. No soredia are to be seen. This *Pyxine* is allied to *P. meissnerina*, Nyl., Lich. Insul. Andam. (1874), p. 5, but the apothecia are lecanorine at first and not *lecideine* throughout, as in *P. meissnerina*, &c.

Pyxine subvelata, Strn.

Thallus albidus vel pallidus, versus centrum ochroleucus vel testaceus, lacinatus laciniis (latit. circiter 1·5 mm.) crenatis vel dissectis, centro congestis et convexulis (K—), intus albidus, subtus niger et rhizinosus; apothecia nigra, plana, tenuiter marginata, primum thallino-velata dein erupta et thallino-marginata demum lecideina, sed sæpe infra marginem albida et lævia; sporæ 8næ, fuscae 1-septatae, binucleatae, sæpius polari-biloculares et quasi 3-septatae, oblongae vel fusiformi-oblongae, 0·015–0·022 mm. \times 0·005–0·007 mm.; paraphyses graciles, distinctae apicibus clavatulis sordide caerulescentibus (K late violaceis). Hypothecium fusco-rubricosum (K sordide violaceum). Iodo gel. hym. caer. Corticola Queensland, prope Jimbour (F. M. Bailey).

Beneath the hypothecium, and enclosed nearly entirely by

a blackish envelope, is seen a purplish-red mass under a Codrington lens. This is tinged in many instances by K a purpureo-violaceous colour. The thallus of this lichen resembles much that of *P. frostii*, Tuck. A thin section of an apothecium reveals, from above downwards, the hymenium proper with its rufo-fuscous hypothecium, then a reddish purpurascens mass. This mass is thickish, and tinged a deeper purpurascens colour by K. Beneath this mass is often seen a yellow mass not affected by K. Beneath this again is a more or less complete exciple surrounding all below, composed of densely-compacted moniliform fibres or rods, about 0.003 mm. thick, capped beneath by bluish-coloured heads (K purpurascens), at times nearly colourless, resembling somewhat the apices of paraphyses. The yellow mass or stratum is mainly composed of gonidia of a peculiar yellow colour with non-granular contents. The basal portion of it is not always seen, but the lateral very generally.

Pyxine cocoës, Sw., from Gasparilla, Trinidad (*G. Brodie*), has not the reddish masses beneath; accordingly I have made this lichen from Trinidad the typical *P. cocoës*, more especially as it has apothecia nearly entirely lecideine throughout.

Pyxine prominula, Strn.

Similis *P. subvelata* sed thallo albido vel pallido-lutescente, lobato-laciniato, adpresso (K—). Medulla albida (K—); apothecia nigra (ab initio), plana, obtuse marginata dein convexula et immarginata; sporæ fuscae, oblongae, 0.015–0.02 mm. \times 0.0045–0.006 mm; paraphyses graciles apicibus caeruleo-nigris (K violaceis). Hypothecium fuscum K sordide violaceum. Corticola prope Chinsurah Indiæ (*G. Watt*).

The purple mass continues down to the hypothallus, and the yellow masses are thus excluded, but appear on the lower lateral aspects, on each side, and presumably surround the purple mass. In this respect also it differs from *P. subvelata*.

Pyxine subcinerea, Strn.

Thallus pallidus vel cinereo-pallidus, crassiusculus (K—), lævis, breviter laciniatus vel squamosus præsertim versus centrum, laciniis crenato-dissectis, nonnihil imbricatis, centro congestis, creberriter albido-sorediosis, intus pallido-flavens (K—); apothecia sessilia vel elevato-sessilia, nigra, plana et vix marginata, dein convexa (latit. 0.6–1 mm.), omnino lecideina; sporæ 8næ, fuscae, oblongae, 1-septatae, binucleatae nucleis sæpe tubulo junctis, 0.016–0.022 mm., rarius 0.024 mm. \times 0.0045–0.006 mm.; paraphyses graciles, sat discretæ apicibus caerulescentibus (K violaceis), clavatulis. Hypothecium

fuscum vel fusco-nigrum. Iodo gel. hym. cærulescens. Queensland (*F. M. Bailey*).

There are no reddish masses beneath the hypothecium. This lichen has the thallus of *P. sorediata*, but I have separated it from the latter, owing to the internal organization both of the thallus and apothecia; besides, the external thallus has a negative reaction by K, while that of *P. sorediata* has a yellow reaction.

ART. XLII.—*New Zealand Musci: Notes on a New Species of Moss belonging to the Genus Seligera.*

By R. BROWN.

[Read before the Philosophical Institute of Canterbury, 5th May, 1897.]

Plate XLI. (in part).

THE small inconspicuous plant which is the subject of this paper was discovered by me in March, 1891, growing on limestone rocks near Castle Hill, West Coast Road, and again in March, 1893, near the pseudo-Maori paintings in the Weka Pass, on rocks of a similar character to those at Castle Hill. In the Weka Pass habitat it was extremely scarce, I having collected only a small patch with one capsule there; but it is more than probable that it will be found in other parts of this district, which is almost entirely of a limestone formation, and is very suitable for this plant's germination.

This moss is interesting from its small size, being only $\frac{1}{3\frac{1}{2}}$ in. high, and has thus far been found only on calcareous rocks, growing along with a few other species of mosses, and is apparently wholly confined to such habitats. This is the first-recorded occurrence of the European genus *Seligera* (to which this new species belongs) in New Zealand. I have named the new species *S. cardotii*, after I. Cardot, the well-known French muscologist.

The figures given are of 25 diameters, with the exception of the peristome, which is drawn to 50 diameters.

Seligera cardotii, sp. nov. Plate XLI., fig. 1.

Plants perennial, growing in dense green patches $\frac{1}{3\frac{1}{2}}$ in. high. *Leaves* erecto-patent, subulate, acuminate, concave. *Margins* entire. *Nerve* excurrent. *Lamina* ending in one row of oblong cells towards the apex; scarcely altered when dry. *Perichætial leaves* similar to the stem leaves. *Fruit* terminal. *Fruitstalk* $\frac{1}{16}$ in. long, pale. *Capsule* turbinate.